

Chicago Tribune, June 17, 2007

MANTENO, Ill. -- Coal burrows in gentle hills near Carbondale, corn sprouts ankle-high from the black earth around Bloomington, and outside Urbana, Shaq-size grass sways in a professor's test field.

Here, in an outdoor showroom lined with gleaming green tractors, customers are the bumper crop. An alternative fuels boom is boosting sales at the Hogan Walker dealership, but the manager has no time to talk details. "Sorry," he explains. "These guys want to buy something."

Some 700 miles away on Capitol Hill, nearly everyone wants to buy into energy independence. Democrats and Republicans have made weaning America from foreign oil a priority, in the name of national security and relief from voter wrath born of soaring gasoline prices. Congress took up sprawling energy legislation last week. Defining the problem is the easy part. The question isn't whether lawmakers will try to accelerate the country's move away from oil. Rather, it's what fuels the nation will move toward.

Through the prism of Illinois, from Cairo to Zion, you can see nearly every important aspect of the debate on energy policy -- from coal country to the Corn Belt to suburban Chicago's high-tech research hubs.

And if you stop in Manteno to watch the John Deeres roll off the lot, you also can see why, in typical Washington fashion, the best solutions might take a back seat to politicians' self-interests.

It adds up to an all-too-common capital conundrum: Nearly everyone says there's agreement on the goal, but the details could derail everything.

"It's going to be very difficult to hash out a compromise," said Rep. Dan Lipinski, an Illinois Democrat who traces his energy interest to an 8th-grade science project on solar power. "I

predict that it's not going to please a lot of environmentalists, a lot of people who want to impact global warming."

The unlikely convergence of public concern over fuel costs and global climate change has fanned America's interest in cheaper, cleaner, domestically produced energy sources.

New demand for ethanol alone has helped corn prices double, leaving many farmers flush with cash and eager to buy new combines, planters and other equipment from dealers such as Hogan Walker. Energy researchers who toiled in relative obscurity for decades -- brushing fame only briefly during the Carter administration's break-out-your-sweater days -- now routinely field calls from lawmakers, venture capitalists and big business.

"This is actually the most exciting part of my whole career," said Hans Blaschek, the director of the University of Illinois' new Center for Advanced BioEnergy Research, who has studied biofuels for more than 25 years.

"The dynamic has really shifted," he said, "from 'Gee, this is a good idea, let's give it some lip service' to actually some rubber meeting the road."

Differences in Congress

Congress is taking several energy roads this month, and they don't all lead to the same place.

The Senate is debating a bill that includes increased automobile gas-mileage standards and ballooning requirements for ethanol and other biofuel production. At least three bills are winding through House committees. They include similar provisions to the Senate bill along with a cap-and-trade system to reduce climate change, as well as incentives to develop liquid coal; boost wind, solar and other renewable sources of energy; and encourage fuels that emit less greenhouse gases.

Nearly every member of the Illinois delegation has a favorite on the list, often tied to his or her home district. Southern Illinois Congressmen Jerry Costello and John Shimkus support coal. Former House Speaker Dennis Hastert, a corn-country Republican, has pushed ethanol for years; colleagues say he now hopes to make it his post-speaker legacy. Suburban congressmen such as Mark Kirk and Peter Roskam advocate for the sort of next-generation energy technologies being developed in their districts' research labs.

Roskam, a freshman Republican who won a tough race last year, has made energy policy a signal issue in Washington. "To advocate for the district is to advocate for a good energy policy," he said, "for three reasons: national security, stewardship and good economic policy."

Other members echo his language -- reduced oil dependence frees the U.S. from the volatile Middle East; lower gas prices ease consumer strain. Several lawmakers also hope to revitalize local economies through energy exports in a fashion Republican Rep. Jerry Weller has already seen in his district, which includes Manteno.

"Farmers are happy; they're spending money," Weller said. "That's good for rural Illinois."

Energy experts say the nation needs a more diverse portfolio of power and fuel sources, but they disagree on what should make the cut. Coal is plentiful, they say, but its emissions could speed climate change. Ethanol burns cleaner than traditional gasoline, but rising demand for corn is inflating food prices too.

Meanwhile, the most promising, Earth-friendly, high-efficiency energy sources may be at least a decade away from reaching consumers.

Enter the researchers.

In an airline-hanger-size lab at the Coal Research Center several miles outside Carbondale, a professor and a graduate student force gas through a superhot, high-pressure set of pipes, gauges and aluminum foil. It looks like a high school science project. In fact, it's a first step toward perfecting how to separate the good products of coal -- such as hydrogen, which can be

used in fuel cells -- from the bad -- carbon dioxide, the root of climate change, which scientists hope to store safely underground.

"Coal is largely carbon," said John Mead, director of the center, run by Southern Illinois University at Carbondale. "From a research standpoint, these are tough, challenging topics ... but we need to have these technologies developed to the point where we have them as [energy] options, or we run out of options."

Renewed coal interest could revitalize a key industry in southern Illinois, which boasted 18,000 coal miners in the 1980s but has only 3,500 today, according to Mead.

Environmental concerns

But several environmental groups protest the inclusion of coal in an alternative energy bill. Jim Presswood, the energy advocate for the Natural Resources Defense Council, said even carbon-scrubbed coal still is worse than conventional gasoline: "If you're talking about a carbon-constrained world," he said, "there's no way liquid coal can play."

Coal skepticism extends to Urbana and the University of Illinois' new bioenergy research center, where researchers from every slice of science are teaming up to tackle alternative energy development from every angle. Then again, they're not sold on corn either.

The center's researchers, who are part of a \$500 million collaboration with the University of California, Berkeley, funded by energy giant BP, are pioneering several new biofuel strategies. Among them: a low-fertilizer, high-yield grass called miscanthus, already 7 feet tall in June, which could provide three times the ethanol per acre as corn -- while avoiding corn's food-versus-fuel debate.

All the fuel possibilities come together at the Gas Technology Institute in Des Plaines, where Roskam helped unveil the metro area's first hydrogen fueling station this spring -- cost: \$3.50 per kilogram, though there are no customers yet -- and where a testing lab for turning coal or biomass into any number of power sources is booked for the next three years.

Political perils

Picking among energy options can bring political perils. Sen. Barack Obama (D-Ill.), for example, has drawn scrutiny from environmental groups for his support of coal-to-liquid fuels. Last week he e-mailed environmentalists a "clarification" saying he supported coal fuels only if they emitted 20 percent less carbon than conventional fuel. Sen. Dick Durbin (D-Ill.) said Friday that he expects a tough fight this week over fuel-economy standards in the Senate energy bill.

With private investment surging, energy experts across Illinois say perhaps the best thing the government can do is invest in research and let the best technologies win out. The University of Illinois' miscanthus pioneer, professor Stephen Long, personally delivered that message -- along with a nudge to focus on the Midwest -- to President Bush in a meeting last winter.

"The potential is there," Long said last week. "We just need the R&D to get it done."

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On the table

Highlights of the Illinois delegation's proposed energy-related legislation in Congress this year:

Sen. Barack Obama (D): Setting a federal low-carbon fuel standard

Sen. Dick Durbin (D): Tripling biodiesel production

Rep. Dennis Hastert (R): Offering tax credits and incentives to increase ethanol use

Rep. Peter Roskam (R): Creating research grants to reduce emissions by buses and other large vehicles

Rep. Dan Lipinski (D): Requiring energy-efficient lightbulbs in federal buildings

Rep. Rahm Emanuel (D): Closing the "Hummer tax loophole" giving tax credit for large SUV purchases

Rep. Judy Biggert (R): Creating a network of "energy technology transfer centers"

Rep. John Shimkus (R): Promoting coal-to-liquid technology